Question Paper Code: R18A31EE04

R18

# ANURAG Engineering College

## (An Autonomous Institution)

## III B.Tech I Semester Supplementary Examinations, June/July – 2024

## RENEWABLE ENERGY SOURCES

## (ELECTRICAL AND ELECTRONICS ENGINEERING)

**Time: 3 Hours** **Max. Marks: 75**

### Section – A (Short Answer type questions) (25 Marks)

| Answer All Questions | | Course Outcome | B.T Level | Marks |
|---|---|---|---|---|
| 1. | What is solar constant? | CO1 | L2 | 2M |
| 2. | Why do use pyranometer and its uses? | CO1 | L2 | 3M |
| 3. | Give classifications of solar collector. | CO2 | L2 | 2M |
| 4. | What are the advantages of concentrating collectors? | CO2 | L2 | 3M |
| 5. | What is the condition for maximum output power from a wind turbine? | CO3 | L2 | 2M |
| 6. | List out three differences between horizontal and vertical axis wind turbine. | CO3 | L2 | 3M |
| 7. | What is the difference between fissures and fumaroles in geothermal energy? | CO4 | L2 | 2M |
| 8. | What is the principle of OTEC? | CO4 | L2 | 3M |
| 9. | List out the limitations of Carnot cycle. | CO5 | L2 | 2M |
| 10. | Differentiate Seebeck and peltier effect. | CO5 | L2 | 3M |

### Section B (Essay Questions)

**Answer all questions, each question carries equal marks.** **(5 X 10M = 50M)**

| | | | | |
|---|---|---|---|---|
| 11. A) | How do you calculate solar radiation on tilted surfaces? | CO1 | L3 | 10M |
| | **OR** | | | |
| B) | How are solar collectors classified? What are the important features of a solar collector? | CO1 | L2 | 10M |
| 12. A) | Classify different solar energy storage systems and explain them in brief. | CO2 | L2 | 10M |
| | **OR** | | | |
| B) | Explain the principle of solar photovoltaic power generation. | CO2 | L2 | 10M |
| 13. A) | Show that a wind turbine cannot extract more than 59.3% of wind energy. | CO3 | L3 | 10M |
| | **OR** | | | |
| B) | Explain briefly the components of a biogas plant with a neat sketch. | CO3 | L2 | 10M |
| 14. A) | Explain with neat diagram the working of a geothermal power plant. | CO4 | L2 | 10M |
| | **OR** | | | |
| B) | Explain the working of tidal power plant with neat layout and specify the site requirements. | CO4 | L2 | 10M |
| 15. A) | Explain i) Seebeck ii) Peltier and iii) Joule Thomson effects. | CO5 | L2 | 10M |
| | **OR** | | | |
| B) | What is the principle of MHD power generation and discuss about the main parts of an MHD generator? | CO5 | L2 | 10M |